# FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

**February 14 to February 20, 2016 (Week 7)**

## Overall Summary

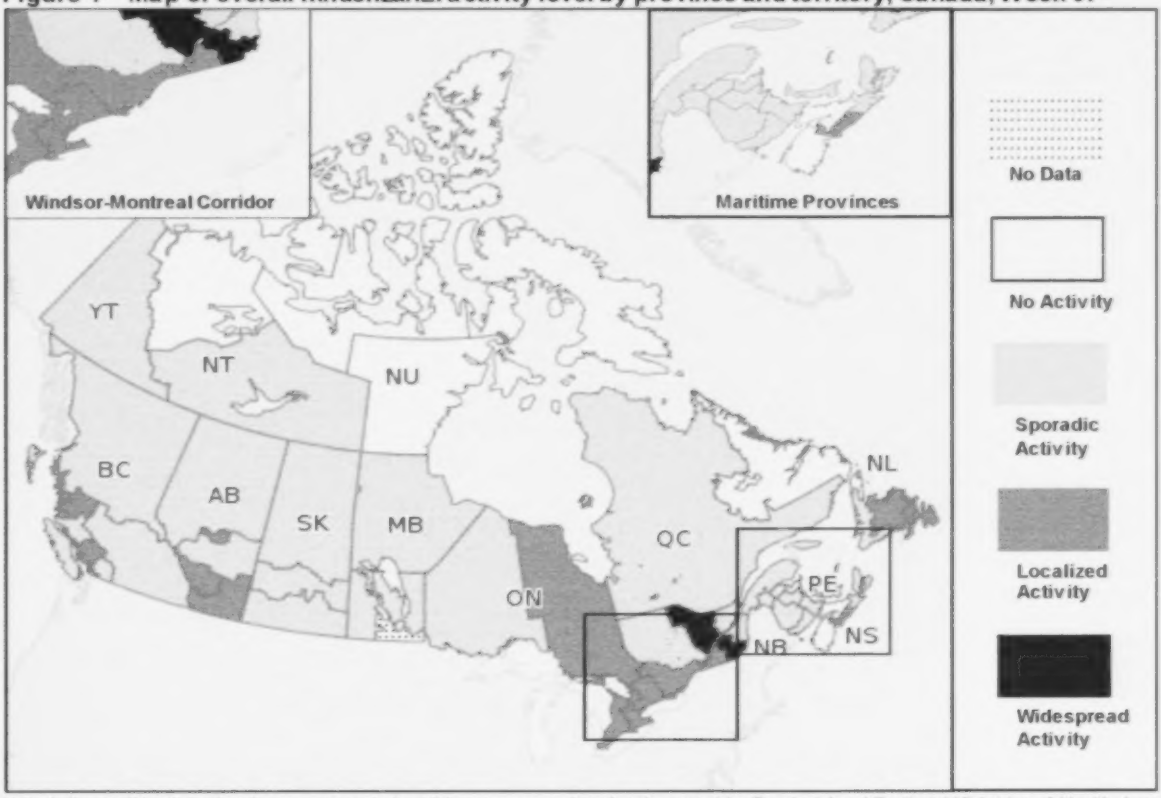
- Overall in week 07, influenza confirmations continued to increase slightly with greater geographic spread
- Pediatric hospitalizations reported by the IMPACT network continue to substantially increase, reaching 94 hospitalizations in week 07.
- Young/middle age adults are accounting for an increasing proportion of hospitalizations and laboratory confirmed cases as reported by participating provinces and territories.
- An increase in the number of outbreaks was reported in week 07 with the majority of outbreaks reported in long-term care facilities.
- Influenza A(H1N1) remains the most common influenza subtype circulating in Canada.
- The World Health Organization has released their recommended composition of influenza virus vaccines for use in the 2016-2017 northern hemisphere influenza season.
- For more information on the flu, see our Flu(influenza) web page.

**Are you a primary health care practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel for the 2015-16 influenza season? Contact us at FluWatch@phac-aspc.gc.ca**

## Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 07, a larger proportion of regions reported elevated activity levels. A total of 29 regions across Canada reported sporadic influenza/ILI activity. Localized activity was reported in 15 regions in Canada and widespread activity was reported in one region of Quebec.

**Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 07**

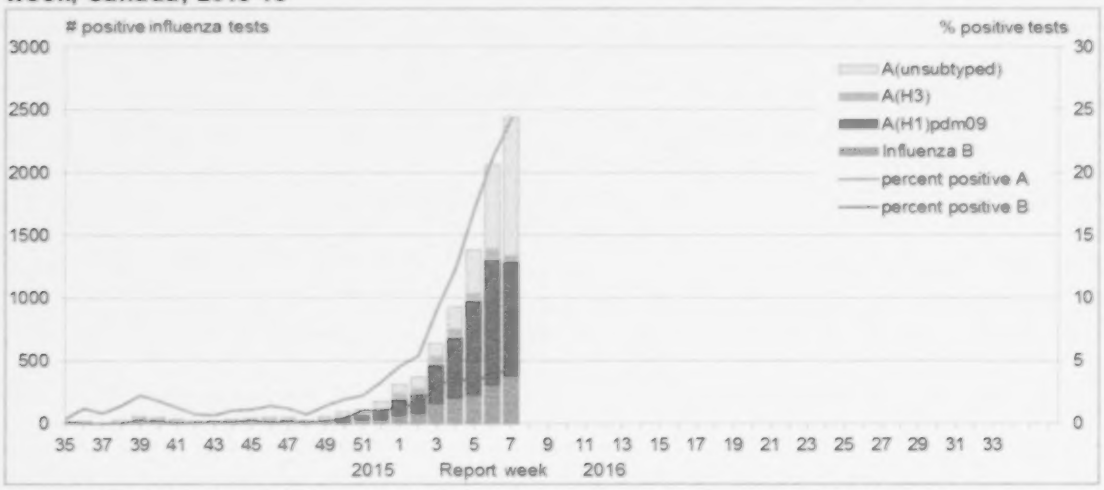



Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

## Laboratory Confirmed Influenza Detections

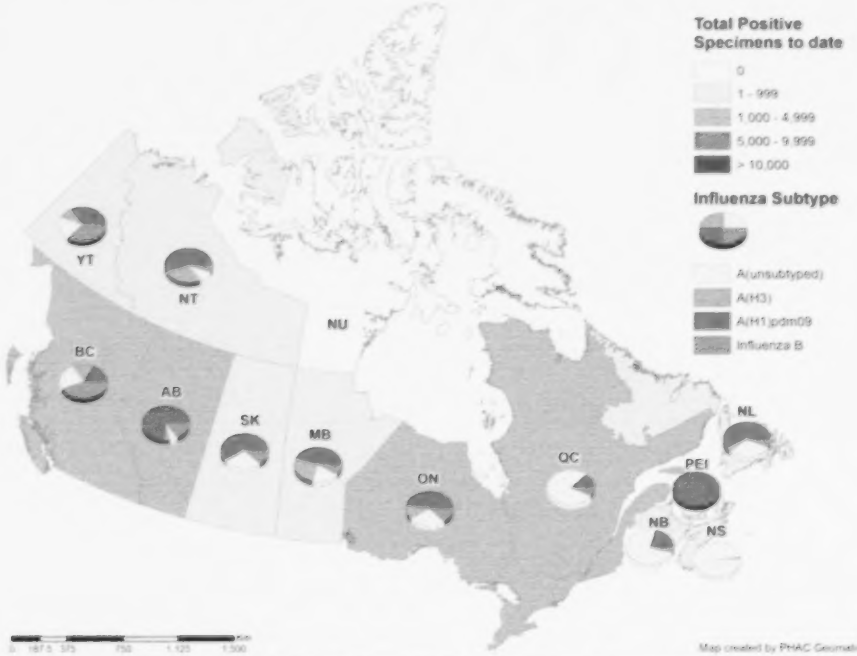
Laboratory confirmed influenza detections continued to increase. The percent positive for influenza increased from 25% in week 06 to 29% in week 07 (Figure 2). Compared to the previous five seasons, the percent positive (29%) reported in week 07 was above the five year average for that week and exceeded the expected levels (range 13.0%-19.7%). With the late start to the 2015-16 influenza season, these above normal levels are not unexpected and are typical of peak season levels.

**Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2015-16**




In week 07, there were 2,453 positive influenza tests reported. Influenza A(H1N1) was the most common subtype detected. The majority of influenza detections were reported in the provinces of AB, ON and QC. Increased detections of influenza in the central and eastern provinces have been noted in the last few weeks. To date, 83% of influenza detections have been influenza A and among those subtyped, the majority have been influenza A(H1N1) [85% (3963/4654)].

**Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province, Canada, 2015-16**




Note: Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data include updates to previous weeks.

To date this season, detailed information on age and type/subtype has been received for 7,622 cases. Adults aged 20-44 years accounted for the greatest proportion of influenza cases (Table 1). Adults aged 20-44 and 45-64 years accounted for 57% of reported influenza A(H1N1) cases. Children 5-19 years and adults 20-44 years accounted for 60% of all influenza B cases reported.

**Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2015-16**

| Age groups (years) | Weekly (Feb. 14, 2016 to Feb. 20, 2016) | | | | | Cumulative (August 30, 2015 to February 20, 2016) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B | Total Influenza A and B | |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS)[3] | Total | A Total | A(H1) pdm09 | A(H3) | A (UnS)[3] | Total | # | % |
| <5 | 289 | 129 | <5 | x[4] | 36 | 1089 | 681 | 42 | 366 | 157 | 1246 | 16.3% |
| 5-19 | 160 | 59 | <5 | x[4] | 51 | 716 | 439 | 65 | 212 | 387 | 1103 | 14.5% |
| 20-44 | 413 | 174 | <5 | x[4] | 76 | 1812 | 1153 | 101 | 558 | 402 | 2214 | 29.0% |
| 45-64 | 357 | 142 | <5 | x[4] | 37 | 1598 | 926 | 138 | 534 | 188 | 1786 | 23.4% |
| 65+ | 239 | 82 | 10 | 147 | 33 | 1084 | 429 | 264 | 391 | 189 | 1273 | 16.7% |
| Total | 1,458 | 586 | 17 | 855 | 233 | 6299 | 3628 | 610 | 2061 | 1323 | 7622 | 100.0% |
| Percentage[2] | 86.2% | 40.2% | 1.2% | 58.6% | 13.8% | 82.6% | 57.6% | 9.7% | 32.7% | 17.4% | | |

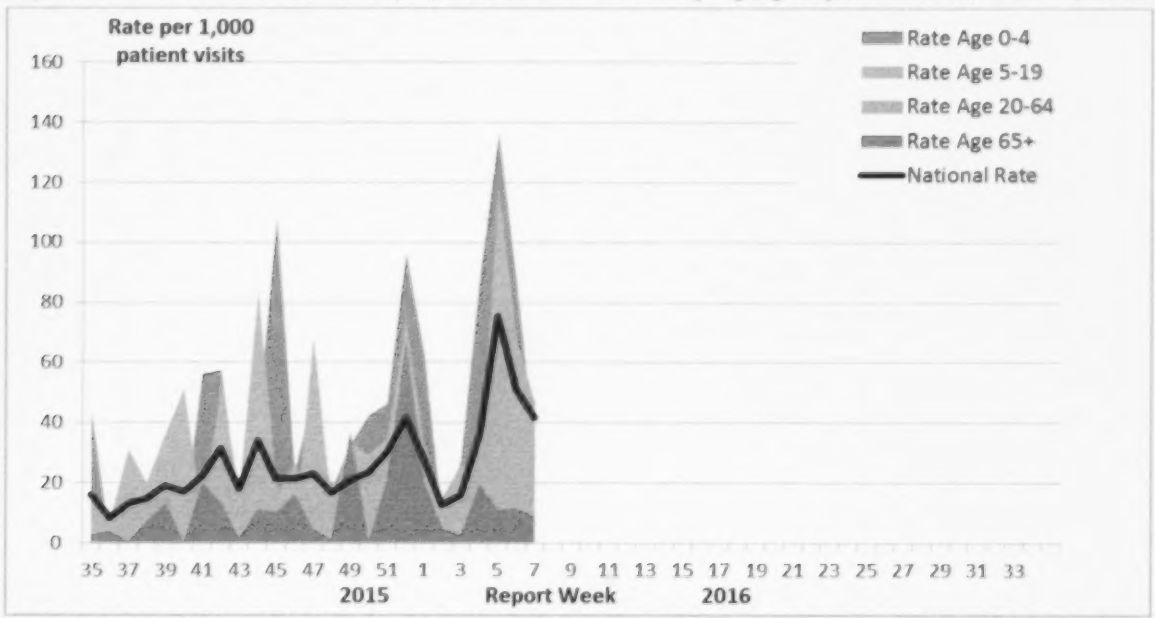
[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
[4]x - Suppressed to prevent residual disclosure

For data on other respiratory virus detections see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada website.

## Influenza-like Illness Consultation Rate

The national ILI consultation rate decreased from the previous week from 51.0 per 1,000 patient visits in week 06, to 41.6 per 1,000 patient visits in week 07. In week 07, the highest ILI consultation rate was found in adults 20-64 years of age (47.4 per 1,000) and the lowest was found in the ≥65 years age group (8.8 per 1,000) (Figure 4).

**Figure 4 – Influenza-like illness (ILI) consultation rates by age group and week, Canada, 2015-16**

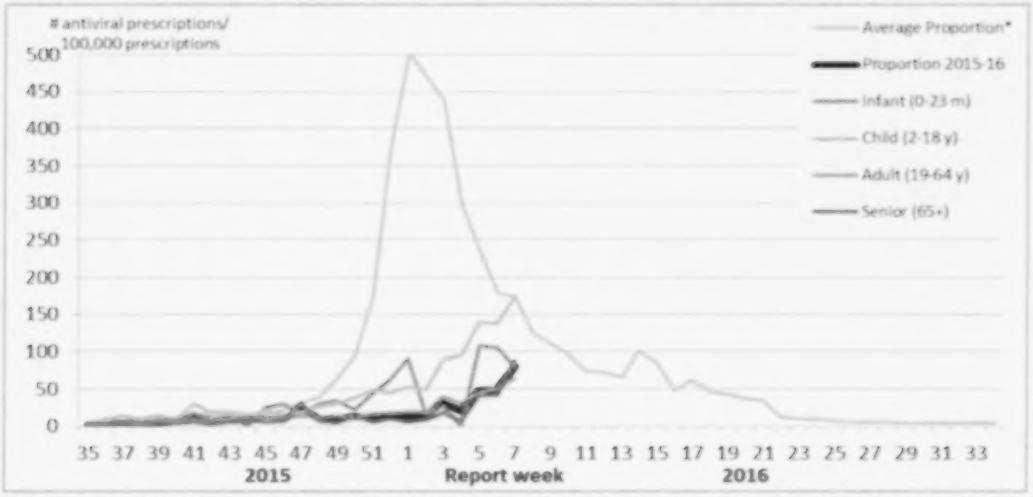



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

## Pharmacy Surveillance

During week 07, the proportion of prescriptions for antivirals increased to 80.2 antiviral prescriptions per 100,000 total prescriptions, which is lower than the five year historical average (5). The rates were highest in children (173.1 per 100,000 total prescriptions).

**Figure 5 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2015-16**




Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 3,000 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group.

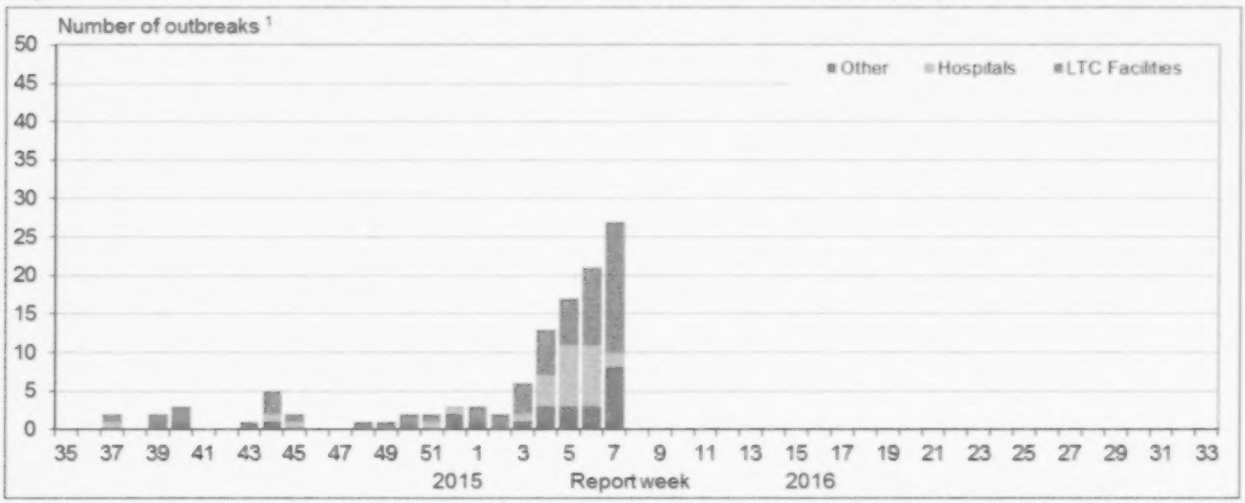
*The average weekly proportion includes data from April 2011 to March 2015.

## Influenza Outbreak Surveillance

In week 07, 27 new laboratory confirmed influenza outbreaks were reported: 17 in long-term care facilities (LTCF), eight in institutions or community settings and two in hospitals. Of the outbreaks with known strains or subtypes, two outbreaks were due to Influenza A(H1N1) and one outbreak was due to influenza B. Additionally, two ILI outbreaks were reported in schools.

To date this season, 131 outbreaks have been reported. At week 07 in the 2014-15 season, 1,367 outbreaks were reported and in the 2013-14 season, 118 outbreaks were reported.

**Figure 6 – Overall number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2015-2016**




[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

## Sentinel Hospital Influenza Surveillance

### Paediatric Influenza Hospitalizations and Deaths

In week 07, 94 hospitalizations were reported by the the Immunization Monitoring Program Active (IMPACT) network (Figure 7). Eighteen hospitalizations were due to influenza A(H1N1) (19%), 18 were due to influenza B (19%) and the remainder were influenza A (UnS).

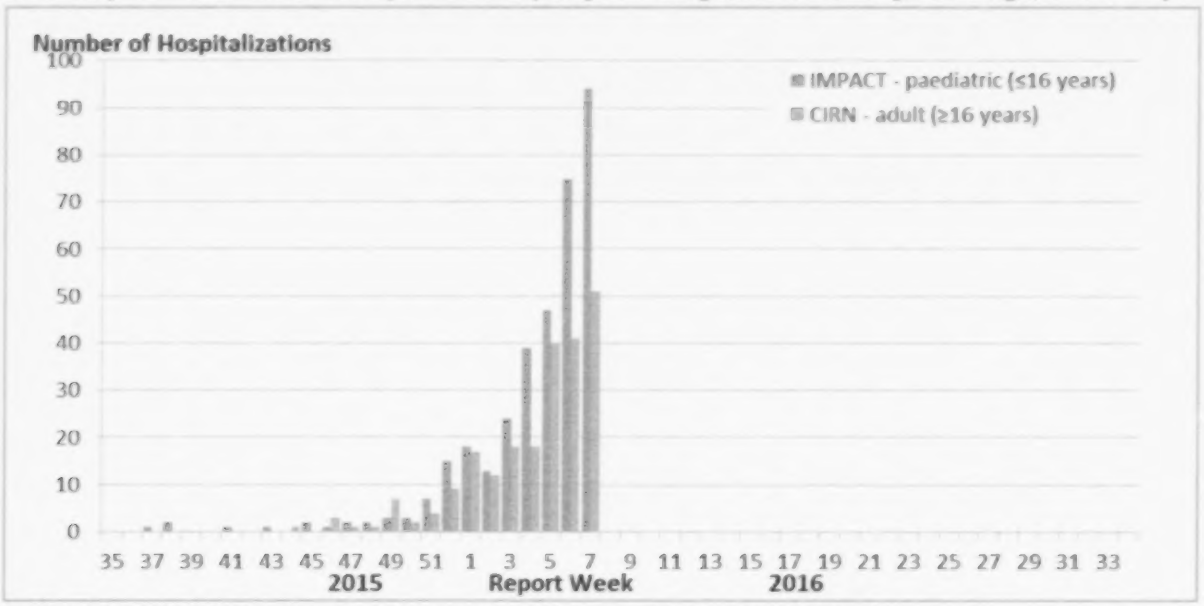
To date this season, 350 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations have been reported by the IMPACT network: 281 hospitalized cases were due to influenza A and 69 cases were due to influenza B. The largest proportion of hospitalized cases were among children aged 2-4 years (31%). To date, 55 intensive care unit (ICU) admissions have been reported. The largest proportion of ICU admissions were reported in children 2-9 years (51%). Less than five influenza-associated deaths have been reported.

**Table 2 – Cumulative numbers of peadiatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, Canada, 2015-16**

| Age Groups | Cumulative (30 August 2015 to 20 February 2016) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | Influenza B | Influenza A and B (#(%)) |
| | A Total | A(H1) pdm09 | A(H3) | A (UnS) | B Total | |
| 0-5m | 37 | 11 | <5 | x[1] | 6 | 43 (12%) |
| 6-23m | 74 | 34 | <5 | x[1] | 13 | 87 (25%) |
| 2-4y | 88 | 38 | <5 | x[1] | 19 | 107 (31%) |
| 5-9y | 59 | 22 | 0 | 37 | 21 | 80 (23%) |
| 10-16y | 23 | 10 | <5 | x[1] | 10 | 33 (9%) |
| Total | 281 | 115 | 11 | 155 | 69 | 350 (100%) |

[1]x - Suppressed to prevent residual disclosure

**Figure 7 – Number of hospitalized cases of influenza reported by sentinel hospital networks, by week, Canada, 2015-16, paediatric and adult hospitalizations (≤16 years of age, IMPACT; ≥16 years of age, CIRN-SOS)**




*Not included in Table 2 and Figure 6 are two IMPACT cases that were due to co-infections of influenza A and B.

### Adult Influenza Hospitalizations and Deaths

In week 07, 51 hospitalizations were reported by the Canadian Immunization Research Network Serious Outcome Surveillance (CIRN-SOS). The majority of hospitalizations were in adults 45-64 and 65+ years of age (84%) and due to influenza A (93%).

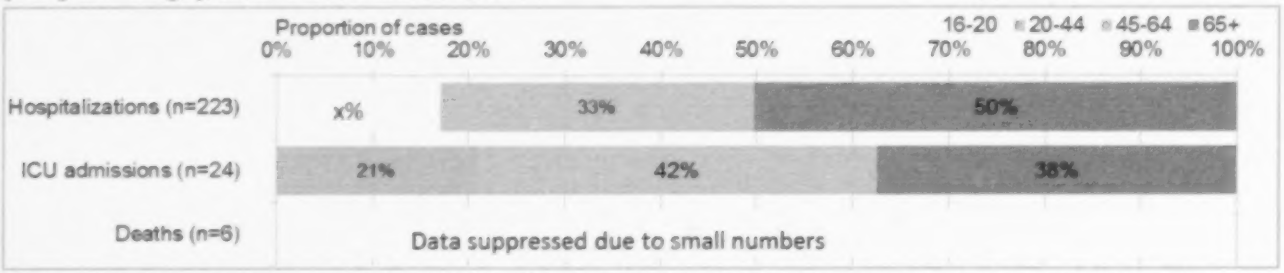
To date this season, 225 laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations have been reported by CIRN-SOS (Table 3). The majority of hospitalized cases were due to influenza A (84%) and the largest reported proption were among adults ≥65 years of age (50%). Twenty-four intensive care unit (ICU) admissions have been reported and among those, 22 (92%) were due to influenza A. Six deaths have been reported this season.

**Table 3 – Cumulative numbers of adult hospitalizations (≥16 years of age) with influenza reported by the CIRN-SOS, Canada, 2015-16**

| Age groups (years) | Cumulative (1 Nov. 2015 to 20 Feb. 2016) | | | | | |
|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A and B |
| | A Total | A(H1) pdm09 | A(H3) | A(UnS) | Total | # (%) |
| 16-20 | <5 | <5 | <5 | <5 | <5 | <5 (x[1]%) |
| 20-44 | 23 | 8 | 0 | 15 | 13 | 36 (16%) |
| 45-64 | 66 | 19 | <5 | x[1] | 7 | 73 (32%) |
| 65+ | 97 | 16 | 14 | 67 | 15 | 112 (50%) |
| Unknown | <5 | <5 | <5 | <5 | <5 | <5 (x%) |
| Total | 189 | 44 | 16 | 129 | 36 | 225 |
| % | 84% | 23% | 8% | 68% | 16% | 100% |

[1]x - Suppressed to prevent residual disclosure

**Figure 8 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥16 year of age), CIRN-SOS, Canada 2015-16**




Note: The number of hospitalizations reported through CIRN-SOS and IMPACT represents a subset of all influenza-associated adult and paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

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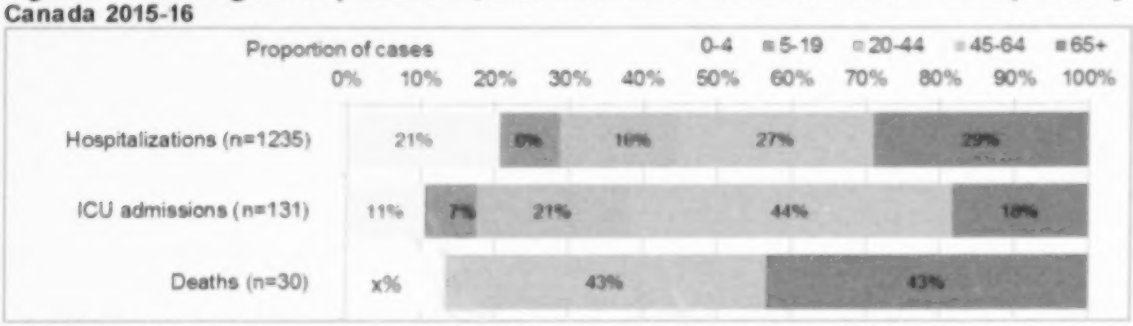
## Provincial/Territorial Influenza Hospitalizations and Deaths

In week 07, 222 hospitalizations have been reported from participating provinces and territories*. The majority of hospitalizations were due to influenza A (89%). The largest proportion of cases reported in week 07 were in children 0-19 years (39%).

Since the start of the 2015-16 season, 1,235 laboratory-confirmed influenza-associated hospitalizations have been reported. A total of 1,105 hospitalizations (90%) were due to influenza A and 56 (10%) were due to influenza B. Among cases for which the subtype of influenza A was reported, 89% (650/727) were influenza A(H1N1). The majority (29%) of hospitalized cases were ≥65 years of age. One hundred thirty-one ICU admissions have been reported of which 118 (90%) were due to influenza A and 57 (44%) were in the 45-64 age group. A total of 30 deaths have been reported, all due to influenza A. The largest proportion of deaths were reported in adults 45-64 and 65+ of age,representing 86% of deaths).

**Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada 2015-16**




* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. Data may also include cases reported by the IMPACT and CIRN-SOS networks. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from ON that occurred in previous weeks, as a result of retrospective updates to the cumulative total. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

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See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2011-12 to 2015-16 on the Public Health Agency of Canada website.

## Influenza Strain Characterizations

During the 2015-16 influenza season, the National Microbiology Laboratory (NML) has characterized 521 influenza viruses [122 A(H3N2), 268 A(H1N1) and 131 influenza B].

**Influenza A (H3N2):** When tested by hemagglutination inhibition (HI) assays, 27 H3N2 virus were antigenically characterized as A/Switzerland/9715293/2013-like using antiserum raised against cell-propagated A/Switzerland/9715293/2013.

Sequence analysis was done on 95 H3N2 viruses. All viruses belonged to a genetic group for which most viruses were antigenically related to A/Switzerland/9715293/2013. A/Switzerland/9715293/2013 is the A(H3N2) component of the 2015-16 Northern Hemisphere's vaccine.

**Influenza A (H1N1)**: Two hundred and sixty-eight H1N1 viruses characterized were antigenically similar to A/California/7/2009, the A(H1N1) component of the 2015-16 influenza vaccine.

**Influenza B:** Forty-six influenza B viruses characterized were antigenically similar to the vaccine strain B/Phuket/3073/2013. Eighty-five influenza B viruses were characterized as B/Brisbane/60/2008-like, one of the influenza B components of the 2015-16 Northern Hemisphere quadrivalent influenza vaccine.

The WHO has released the recommended composition of the northern hemisphere influenza vaccine for the 2016-2017 season. Trivalent vaccines are recommended to contain 1) an A/California/7/2009 (H1N1)pdm09-like virus 2) an A/HongKong/4801/2014 (H3N2)-like virus, and 3) a B/Brisbane/60/2008-like virus (Victoria lineage). Quadrivalent vaccines are recommended to additionally contain a B/Phuket/30732013-like virus (Yamagata lineage).

The recommended components for the 2015-2016 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A/Switzerland/9715293/2013(H3N2)-like virus, and a B/Phuket/3073/2013 -like virus (Yamagata lineage). For quadrivalent vaccines, the addition of a B/Brisbane/60/2008-like virus (Victoria lineage) is recommended.

The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition testing compared to the reference influenza strains recommended by WHO.

## Antiviral Resistance

During the 2015-16 season, the National Microbiology Laboratory (NML) has tested 475 influenza viruses for resistance to oseltamivir and zanamivir and 336 influenza for resistance to amantadine. Close to 100% of all viruses were sensitive to oseltamivir. All viruses tested for restistance were sensitive to zanamavir. A total of 335 influenza A viruses (99%) were resistant to amantadine (Table 4).

**Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2015-16**

| Virus type and subtype | Oseltamivir | | Zanamivir | | Amantadine | |
|---|---|---|---|---|---|---|
| | # tested | # resistant (%) | # tested | # resistant (%) | # tested | # resistant (%) |
| A (H3N2) | 116 | 0 (0%) | 116 | 0 (0%) | 126 | 125 (99.2%) |
| A (H1N1) | 230 | <5 (x%) | 230 | 0 (0%) | 210 | 210 (100%) |
| B | 119 | 0 (0%) | 119 | 0 (0%) | NA[1] | NA[1] |
| TOTAL | 465 | <5 (x%) | 465 | 0 (0%) | 336 | 335 (99.7%) |

[1]NA: Not Applicable

x - Suppressed to prevent residual disclosure

## International Influenza Reports

*World Health Organization influenza update*
*World Health Organization FluNet*
*WHO Influenza at the human-animal interface*
*Centers for Disease Control and Prevention seasonal influenza report*
*European Centre for Disease Prevention and Control - epidemiological data*
*South Africa Influenza surveillance report*
*New Zealand Public Health Surveillance*
*Australia Influenza Report*
*Pan-American Health Organization Influenza Situation Report*

**FluWatch Definitions for the 2015-2016 Season**

**Abbreviations**: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

**Influenza-like-illness (ILI)**: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

**ILI/Influenza outbreaks**

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

*Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.*

**Influenza/ILI Activity Levels**

**1 = No activity:** no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

**2 = Sporadic:** sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

**3 = Localized:** (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

**4 = Widespread:** (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

*Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.*

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

*† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.*

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*

This report is available on the Government of Canada influenza webpage under Weekly influenza reports.

Ce rapport est disponible dans les deux langues officielles.